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ON THE GENUS *AMPHIPSYLLA*, WAGN. (1909).

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(PLATES II. & III.)

PROFESSOR WAGNER proposed *Amphipsylla* for two new species of Siphonaptera from Asiatic Russia, and gave a review in 1912 of the species known to him as belonging to this genus.

The species contained in *Amphipsylla* form a natural group, being all closely allied to one another, and we perfectly agree with Wagner that they should be placed together in a separate genus. The species mentioned by Wagner are *sibirica*, *shelkovnikovi*, *dæa*, *rossica*, and *kuznetzovi*. We add to this list five more species, two of which are here described for the first time. This considerable addition to the genus renders a slight modification of the diagnosis necessary, as some of the characters mentioned by Wagner do not hold good.

In his revised diagnosis (1912) Wagner states that both sexes have two antepygidial bristles. This is a pen-slip, all the species having three such bristles.

We consider *Amphipsylla* to be an offshoot from *Ceratophyllus*, from which it is distinguishable by the following combination of characters:—

Head with three rows of bristles across frons and occiput; frons strongly rounded. Eye reduced. Antennal groove open, in male continued on to the propleurum. Bristles of second antennal segment short in both sexes. Hind margin of pronotum

slightly incurved. First segment of maxillary palpus longer than the second. Fore femur with several small lateral bristles on outside, hind femur without a subventral row of bristles. Mid and hind tibiae with two to four single dorsal bristles in between the postmedian and subapical dorsal pairs. Bristles of tarsi short, fifth segment with the first pair of plantar bristles moved on to the ventral surface. In the male the eighth sternite is large; the movable process of the clasper armed with strong spiniform bristles; clasper without a bristle at the insertion of the movable process; ventral arm of ninth sternite without sinus. In the female the eighth tergite with an oblique vertical row of bristles on the side, proximally to the row some smaller bristles, and at the apex two bristles (rarely one), below which there is a small bristle on the inside; duct of receptaculum seminis short, head of same at least as long as the tail.

Genotype *shelkovnikovi*, Wagn. (1909).

Not any single one of the above-mentioned characters is restricted to *Amphipsylla*. The genus *Ceratophyllus* contains several species with reduced eyes or with one ventral and four lateral pairs of plantar bristles on the fifth tarsal segment, or with short bristles to the second antennal segment, &c., but a combination of all these characters is only met with in *Amphipsylla*.

Whereas the males of *Amphipsylla* are easily distinguished from one another by differences in the modified abdominal segments, the females are exceedingly difficult to separate, at any rate in some of the species. The number of bristles is not reliable, as Wagner has already pointed out, and even the posterior abdominal segments are in some cases of no assistance. For these reasons, therefore, it will be a difficult matter to identify those species which have been described from females only, viz. *shelkovnikovi*, *sibirica*, *rossica*, and *thoracicus*.

The males, apart from the genitalia, are likewise so much alike that the description of one species fits in almost every detail all the other species.

The seventh sternite of the female is truncate, rotundate, or slightly incurved in *shelkovnikovi*, *thoracicus*, *daa*, *pollionis*, and *casis*; while this segment is obliquely sinuate with the upper angle distinctly produced as a lobe in the two new species here

described and presumably also in *kuznetzovi*. The seventh sternite of *rossica* and *sibirica* has not been described or figured.

The genus occurs from France to China, and is also represented in Canada.

1. AMPHIPSYLLA SHELKOVNIKOV, Wagn. (1909).

*Amphipsylla shelkovnikovi*, Wagner, Mitt. Kaukas. Mus. iv. 3, p. 197, fig. 2, and p. 201 (1909); id., Rév. Russe Ent. xii. p. 578, fig. 4 (1912).

Only the female is known.

The seventh abdominal sternite, according to Wagner's figure, is truncate and slightly incurved. The eighth tergite bears the usual 2 + 1 apical bristles, 2 or 3 submarginal ventral ones, and above them 4 to 6 (in Wagner's figure 3) lateral bristles, the oblique vertical bristles appearing to be much reduced.

Lenkoran, off *Cricetus phæus*.

2. AMPHIPSYLLA ROSSICA, Wagn. (1912).

*Ctenopsylla sibirica*, Wagner, Hor. Soc. Ent. Ross. xxxi. p. 578 (1898) (partim).

*Amphipsylla sibirica*, id., Mitt. Kaukas. Mus. iv. 3, pp. 197 and 201 (1909) (partim).

*Amphipsylla rossica*, id., Rév. Russe Ent. xii. p. 576, fig. 3 (1912).

Only the female is known.

The seventh sternite is not described. This is possibly the same species as *thoracicus*, or as the one described below from Bohemia and Turkestan.

Charkow, Russia, off *Putorius vulgaris* and a rodent.

3. AMPHIPSYLLA THORACICUS, Roths. (1911).

*Palæopsylla sibirica*, Rothschild (nec Wagn. 1898), Nov. Zool. xvi. p. 68, no. 10 (1909).

*Ceratophyllus thoracicus*, Rothschild, Ann. Sci. Nat. (9) xii. p. 210, fig. 3 (1911).

Only the female is known.

In the type specimen the eighth abdominal tergite bears on the outer surface only one apical bristle instead of two on both

sides of the body. The second specimen, a paratype, has two such bristles. Fig. 8 represents the seventh sternite and eighth segment of this example, whereas the figure of the receptaculum seminis (fig. 7) is taken from the type.

The bristles on the second segment of the antenna are shorter than one-third the length of the club.

The proportional width (measured near the base) and length of the stylet are 1 : 3.8.

Kirkenen, Finmark; the host not known.

The species apparently also occurs in France, whence we have a female found at S. Paul, Basses Alpes, on *Evotomys nageri* by Monsieur A. Mottaz. The example was originally identified by us as *sibirica*, Wagn. (1898), but it agrees so well with *thoracicus*, particularly the paratype, that we must consider it to belong to that species. The male may possibly be different.

#### 4. AMPHIPSYLLA DÆA, Dampf (1910).

*Typhlopsylla sibirica*, Wagner (nec Wagner, 1898), Hor. Soc. Ent. Ross. xxxv. p. 26, no. 8 (1900) (Transbaicalia).

*Palæopsylla sibirica*, Rothschild, Nov. Zool. xvi. p. 68 (1909).

*Palæopsylla dæa*, Dampf, Zool. Jahrb., Suppl. xii. 3, p. 633, fig. q-v (1910).

*Mesopsylla dæa*, Jordan & Rothschild, Nov. Zool. xviii. p. 79 (1911) (Turkestan).

*Amphipsylla dæa*, Jordan & Rothschild, Proc. Zool. Soc. Lond. p. 385 (1911); Wagn., Rév. Russe Ent. xii. p. 577, fig. 2 (1912).

Both sexes are known.

Wagner (1912) pointed out some differences between his *sibirica* of 1900 and *dæa*.

The lateral bristles of the eighth tergite of the female are very numerous, according to Dampf's figure. The movable process of the clasper of the male is elongate-triangular, being widest at the apex and having two black spiniform bristles. One of these bristles is pointed and placed below the middle of the posterior margin; the other spine is short and obtuse, and is situated at the posterior apical angle.

Turkestan and Transbaicalia (not "Transcaspia," as Wagner says in 1912, *l. c.*).



## 5. AMPHIPSYLLA SIBIRICA, Wagn. (1898).

*Pulex penicilliger*, Grube, Middendorff's Reise, ii. p. 500 (1852) (female nec male; Turuchansk).

*Ctenopsylla sibirica*, Wagner, Hor. Soc. Ent. Ross. xxxi. p. 578, t. 8, figs. 13, 14 (1898) (partim—Specimina ex Charkow = *rossica*).

*Palæopsylla sibirica*, Rothschild, Nov. Zool. xvi. p. 68, no. 10 (1909) (partim); Dampf, Zool. Jahrb., Suppl. xii. 3, p. 633 (1910).

*Amphipsylla sibirica*, Wagner, Rév. Russe Ent. xii. p. 575 (1912) ("Turkestan" ex errore).

Only the female is known.

Turuchansk, Northern Siberia (Jenisseisk), not Turkestan as stated by Wagner in 1912; host *Putorius sibirica*.

## 6. AMPHIPSYLLA CASIS, Jord. &amp; Roths. (1911).

*Amphipsylla casis*, Jordan & Rothschild, Proc. Zool. Soc. Lond. p. 385, no. 10, text-figs. 118, 119 (1911) (Shensi).

Both sexes are known.

The eye is very small. The movable process of the clasper (male) is narrowed at the apex, and the eighth sternite of the male is exceedingly hairy, the hairs being thin, and many of them very long. The seventh sternite of the female is slightly emarginate.

In the female the frons is but slightly rounded, the lower portion not being curved backwards. The bristles of the second antennal segment are at least half as long as the club. The proportional breadth and length of the stylet are 1:2.5.

Shensi, China, off *Myospalax fontainieri*.

## 7. AMPHIPSYLLA POLLIONIS, Roths. (1905).

*Ceratophyllus pollionis*, Rothschild, Nov. Zool. xii. p. 171, no. 15, t. 9, figs. 28, 31, 32 (1905) (Alberta).

Both sexes are known.

The movable process of the clasper of the male is triangular, being broadest at the apex, and bears two black spiniform bristles. The eighth sternite of the male bears about ten long bristles and a few short ones.

In the female the seventh sternite is rounded; the bristles of the second antennal segment are less than one-third the length of the club, and the proportional width and length of the stylet are 1 : 4.3.

Alberta, Canada, off *Microtus drummondi* and *Evotomys saturatus*.

8. AMPHIPSYLLA KUZNETZOV, Wagn. (1912).

*Amphipsylla kuznetzovi*, Wagner, Rév. Russe Ent. xii. p. 579, fig. 5 (1912).

Only the male is known.

The movable exopodite of the clasper is rather abruptly widened in the apical half, bearing three black spiniform bristles, one of which is placed on the inner surface half-way between the anterior and posterior margins. The eighth and ninth sternites are not described or figured.

Ural Mts., off *Microtus middendorfi*.

9. AMPHIPSYLLA CONTIGUA, spec. nov. (Pl. II. and III., figs. 1, 5, and 6.)

Very close to *A. kuznetzovi*.

The hind tibia bears usually three, rarely two, bristles between the postmedian dorsal pair and the subapical pair.

♂. The eighth tergite has three long and one or two small bristles. The eighth sternite (Pl. II., fig. 1, VIII. st.) bears bristles only at and close to the margin, there being fourteen or sixteen bristles placed as shown in the figure. The process P of the clasper (Cl) is dorsally convex and distally concave. The movable process F resembles that of *kuznetzovi*, but is more gradually widened distally and bears only two black spiniform bristles. The upper one of these bristles is very stout and placed near the upper distal corner, while the lower one is longer, pointed, and situated near the posterior margin on the wide part of the process a short distance from the narrow portion. Between these two spines there are two bristles at the edge on the outer surface, and two more on the inner surface at some distance from the edge. The apical margin bears one fairly long thin bristle, and in addition on both the outer and inner surfaces a thin hair placed at about half-way from the long

bristle to the anterior apical angle. In the new species the apical spine is placed outside an imaginary line connecting the larger apical bristle with the lower spine, whereas in *kuznetzovi*, according to Wagner's figure, this spine is situated proximally to the line. The ninth sternite (ix. st.) resembles that of *A. casis*, with the apical portion of the horizontal arm narrow.

♀. The seventh sternite is sinuated, with the upper angle produced into a more or less pointed lobe. The eighth tergite bears thirteen to sixteen bristles inclusive of the apical ones. The proportional breadth and width of the stylet are 1:3. The head of the receptaculum seminis is as long as the tail (figs. 5 and 6).

Two pairs from Eger, Bohemia, January, 1912, off *Mustela erminea*, collected by E. Hentschel; also some specimens from the neighbourhood of Djarkent, in East Turkestan, off a white weasel, collected by W. Rückbeil.

10. AMPHIPSYLLA CERTA, spec. nov. (Pl. II. and III., figs. 2, 3, and 4.)

♂ ♀. The hind tibia has between the postmedian and sub-apical dorsal pairs of bristles usually three, seldom two or four bristles.

♂. The eighth tergite bears from the stigma downwards fifteen bristles in one specimen (type) and ten in another, these bristles being distributed from the dorsal margin to near the ventral one. The eighth sternite has about fifteen long or fairly long bristles at and near the edge, and about twenty small ones besides. A small ventral cone bearing a bristle from between the seventh and eighth sternite projects on each side. The process P of the clasper is essentially the same as in the preceding species, while the movable process is very different. This finger (F, Pl. II., fig. 1) is an oblong which widens apically, and of which the ventral distal angle projects downward. It bears at the posterior margin three black spiniform bristles, two below the upper distal angle (one curved upwards, the other downwards), and the third at the lower angle directed downwards. A fourth but smaller black bristle is placed on the inner surface at some distance from the edge. The apical edge

of the finger bears a fairly stout bristle at the posterior angle, and on both sides a small one almost in the centre. The ninth sternite is distally so obscured that the apical portion of the ventral arm cannot be made out clearly in specimens (ix. st.).

♀. The seventh sternite (Pl. III., figs. 3, 4, vii. st.) resembles that of the previous species, but the lobe above the sinus is sometimes shorter and more rounded. The eighth tergite has sixteen to eighteen bristles, inclusive of the apical ones. The proportional width and length of the stylet are 1:2.6. The head of the receptaculum seminis is slightly longer and narrower than in the previous species, but this is possibly due to the organ not being in exactly the same position in the specimens examined.

In *certa* and *contigua* the bristles of the second antennal segment of the female are less than one-fourth as long as the club.

Three males and five females from near Djarkent, Semitchenskoi, East Turkestan, February 11th and November 15th, 1912, off *Meriones tamaricinus*, collected by W. Rückbeil.

#### EXPLANATION OF PLATES II. & III.

- FIG. 1.—Clasping organs of male of *Amphipsylla contigua*: viii. t., eighth tergite; viii. st., eighth sternite; Cl., clasper; P, process of same; F, movable process; M, manubrium; ix. st., ninth sternite.
- „ 2.—Clasping organs of male of *Amphipsylla certa*.
- „ 3.—Seventh (vii. st.) and eighth (viii. t. and viii. st.) abdominal segments of female of *Amphipsylla certa*.
- „ 4.—Seventh abdominal sternite of another female of *Amphipsylla certa*.
- „ 5.—Receptaculum seminis of *Amphipsylla contigua*, subventral view.
- „ 6.—The same of another specimen, lateral view.
- „ 7.—The same of *Amphipsylla thoracicus* (type).
- „ 8.—Seventh (vii. st.) and eighth (viii. t. and viii. st.) abdominal segments of *Amphipsylla thoracicus* (paratype).



# A DIARY OF ORNITHOLOGICAL OBSERVATION MADE IN ICELAND DURING JUNE AND JULY, 1912.

BY EDMUND SELOUS.

(Continued from p. 313.)

*June 14th.*—Next day—that is to say, this morning—I started with Sigurdsson for another lake, on an island in which a pair of Great Northern Divers had made their nest. Of this my host had been advised by the occupant of the neighbouring farm, the wild bleak country, that is to say, stretched round about the lake in question, which, with all its seeming barrenness, has yet a good deal of grass, and supports both sheep and cows—in fact is not barren at all, but only looks it by virtue of its bleakness and wildness, and the black, stony hills and, farther off, mountains, that rear themselves out of it. It was six hours' journeying through this wilderness, much of the way being so swampy that every plod forward was a sinking down, as well—happily, however, not so deep as it gave me the sensation of being. At length we came to a row of small gables, the slopes of which descended to the level of the grass, with which they were largely covered, so that the horses, when we dismounted, began to graze upon them. Under one of these we were soon made welcome by the farmer and his wife, the latter of whom made and poured out coffee for us, to the pleasure of which that of biscuits, of no mean order, was soon added. Then the farmer, having mounted his own horse and we ours again, guided us to the place, and, in due course, my tent was set up and I left alone in it. The island, or rather islet, of which I have spoken, is a tiny little round, grassy hillock rising from a marginal circlet of stones and small rocks. Just at one point, the grass comes down to the water's edge or would do so, but for a steep bank, some six or nine inches in height, perhaps, which divides them, the stones running out from it, with a little channel of navigation in their midst. It is

just above this bank that the Divers have made their nest, which has but one egg in it, a fact which, as the proper complement is two, and the period of incubation now well advanced *donne furieusement à penser*. Still more is this the case in respect of another single egg lying in another nest—a Swan's namely—which crowns as with a huge, brown sombrero the little green islet-head, on which, since it is close to the shore, my tent looks directly down. This one egg had three fellows to it: where are they now? But not only that—another four that were never hatched, preceded them: where are *they* now? Gulls have been mentioned to me as a possible answer to this question. Great Black-backed Gulls certainly haunt these Iceland lakes, but they more affect the larger ones, on islands in which they even build. This, though it would be a large loch in the Shetlands, hardly falls under that category here, nor (anticipating) have I seen any either in it or in others adjoining to it, for several lie about, and are possibly connected with each other. It is the same where I have just come from. The great lake is uniformly tenanted by these Gulls—and these alone—at least during this season of the year, but in the lake-like expanses of the river though they are quite near to it and contain islands on which Swans build I have not seen any. But allowing their presence, what, one may well ask, are the Swans about that they should allow themselves to be thus caught napping, or braved with impunity?

“Is the chair empty? is the sword unswayed?”

Seldom, I think, if ever, is this the case. From what I have seen, both here and in the Swannery at Abbotsbury the “empire” whilst vulnerable is never “unpossessed.” In the Shetlands too I have seen the Red-throated Diver and Great Black-backed Gull breeding in close proximity, without paying any attention to one another, and particularly noted that whilst Ravens and Crows, when they flew over the breeding-loch of the former species, were pursued and driven away by the bird on duty, or by the pair of them, Gulls of any kind were not interfered with when they did so—as was far more frequently the case. True it is that there was never anything in their conduct, on these occasions, that had a suspicious appearance, which could,

by no means, equally be said of the other two—but this is also in their favour. No, when either Swans' eggs or Divers' eggs disappear in the above-recorded manner, Gulls may be blamed for it, and pass, with Gulls, as an apology, but for my part

“Timeo Danaos (et) dona ferentes.”

The two Swans, when we first came in view of them, sat one on the nest and the other on the grass, at about the same distance apart as the pair that I had first seen usually were. Our approach, of course, sent them both far afield, and the farmer then rowed us across to the islet, which he seemed to think an absolutely necessary preliminary to my watching any bird upon it. It enabled me, indeed, to locate the Diver's nest exactly, as well as to ascertain a few facts which I could not otherwise have been sure about, but my own methods would have inclined me to dispense with this, and trust entirely to the glasses. The voyage was a very short one, but the boat, as though determined that it should be no whit safer or more comfortable, on that account, leaked to an even more remarkable degree than the one that had previously conveyed me to the Eagles, when the distance had been greater, so that I was equally glad to get out of it, both going and returning.

After I had been about an hour in the tent, by myself, the two Swans came flying back to the islet. They alighted on the water, just in front of it, and a scene was then enacted between them of a very bizarre and quaint kind. Coming down one behind the other, they both held themselves rigidly upright, their long necks stretched straight up, and their wings, which were only partially spread, pointing a little forward, with their points just touching the water. Then they began to flap them, but constrainedly, as it were, raising them, each time, but very little from the surface of the water, and bringing them down upon it again; and thus, one behind the other and each the exact duplicate of the other, they flapped and cried in unison, always in the same odd, stiff pose, till, towards the last, before sinking down into usualness, the foremost one turned round, so as to front the other, and they continued thus to flap and cry, in this altered groupage—for there was the same musical note, but I thought it had a less joyful ring in it. It was the oddest

thing to see. Each of the two birds seemed possessed with the spirit of doing exactly the same as the other one did, and the whole was like a curious set form to which both seemed to attach great importance.

A spectacle such as this may perhaps give one some insight into the essential nature of an antic—of those formal and seemingly purposeless movements which yet play so large a part in bird life. They would seem to spring, primarily, out of excitement, and this must be of a joyous, or, at least, comfortable kind, for joy is most consistent with leisure, which is required for actions of no particular use in themselves—expatiatory actions, as one may call them; fear, for instance, would counsel escape, which would leave no time for such. Excitement naturally produces motion, motion must take some form, and if one bird caught it, whatever it was, from another, unconsciously imitating what it saw, and helped to do so by sensations similar in kind, the memory of what had been seen and joined in on former similar glad occasions would help in producing the same set of actions on subsequent ones, until they became a fixed habit. One has to imagine a readiness on the part of one bird to do what another that is with it does, when both are under the influence of similar excitement, and this, in birds that kept much together—that were social in their habits—might produce a quickness in seizing and following, practically amounting to simultaneousness of action. Whether this explanation is sufficient to account for uniform movements occurring, apparently, at the same actual instant of time, amongst a whole crowd of birds—for instance a flight of Starlings—so that all act together, through a wide space, in making any tilt, turn or sudden reversal of direction, though no individual can be supposed to see more than those of its fellows who immediately surround it, is a question which every observer must decide for himself. Personally I do not think that it is, and must suppose that there is some sense or faculty which aids birds, when thus acting collectively, the nature of which I am not acquainted with. But if so, the exercise of such a faculty need not be dependent on the numbers being very considerable, even though this had a stimulating effect upon it, but might help to explain uniformity and simultaneousness of



action on the part of any two birds—for instance of these two Swans, for they seemed to act exactly together, and to know, together, exactly what they both meant to do.\*

The above remarks would apply more particularly, to the origin of what may be called social antics, of movements, that is to say, which do not apparently spring from any sexual stimulus, but seem rather the outcome of some state of excitement manifesting itself between two or more birds, which has nothing to do with this. I do indeed think that various antics which have become social have had a sexual origin, but that is no reason why others should not have originated spontaneously out of social conditions. It is possible, however, that in a wider and less specialised sense than that which I have been considering, the ultimate origin of all social antics may have been of a sexual nature. These Swans, for example, since they were incubating, probably acted in the way they did, under the influence of some kind of parental emotion, but the parental instinct is born out of the conjugal one—follows it, at any rate, by a fixed law of sequence—and though the very striking and pronounced autumnal antics of the Stone Curlew seem to be of a purely social character, yet the very fact of their manifesting themselves at that season only (as far as I know) might incline some to consider them as a sort of sequelæ of the state of sexual excitation belonging to the precedent breeding-time, which is but just over. It is not, one may almost say, till the winter, that the sex stimulus, in some shape or form, is quite dead, so that the question whether social antics depend ultimately upon sexual activity, in birds, could perhaps best be answered by an inquiry as to whether, or to what extent, they also cease at that period. Actions which do not stand in any relation to that factor ought not, one would think, to be governed by the seasons in any way which is at all correspondent to that in which it is.

Some time before this Swan episode, one of the pair of Great Northern Divers—that one probably that was on the nest when

\* This is perhaps suggested by the fact that only one of the pair turned round, so as to front the one behind it. It would have been more in keeping with what had gone before if this one had turned round too. Had it done so, however, there would have been no confrontation scene, which seems thus to have been desired by both.

we came—had returned to the islet, and kept swimming just off it, often with its body almost submerged, which may have been for the sake of concealment. At last, about 7 p.m., it went on to the nest again. Being engaged with the tent, at the time, I did not myself see the landing, but afterwards I could watch its head, as it sat, with the glasses, and it continued so to sit till past 11, when I went to bed, and when I first looked out on the following morning—

*June 15th*—which was at a little past 6, there was the, or at least a, head still, for whether it belonged to the same bird or not I could not, of course, be certain, but I believe it did, and that it was the better of the two, *viz.*—but there is no need to specify further. The bird continued to sit for more than another hour, when her partner appeared, rounding a curve of the islet, and, on seeing him, she came off the nest into the water, sliding down the bank, as it appeared to me, and swam towards him. The two rounded the point in opposite directions, passing each other without any close approach or observable greeting, and the newcomer, after swimming in once or twice, under the bank, and then out again, at length took his place on the nest, appearing to force himself up the bank by a single powerful impetus, but more than this I could not make out from where I was. I now took down the tent and pitched it again right out of sight of the island, for it was better, I thought, that the birds should not see it, and I much preferred watching them *al fresco*. When I returned to my outlook at 10 a.m., the nest was still occupied, and, whilst watching it, the partner-bird reappeared near the islet, rounded it, then dived, and I saw it no more. It came up the lake in a very leisurely manner, frequently turning right on its side, with one leg stretched out behind it, above the water, so that almost the whole of the white ventral surface was visible. In this position it kept preening itself, when it would turn round and round in the water, not, it seemed, with any purpose of doing so, but by the laws of mechanics merely, probably because, through habit, it still kept paddling with the foot that was under water. Now imagine this rotary motion, added to the gleaming white breast and speckled back, and then let naturalists seriously ask themselves whether anything protective is to be made out of the result. I, at least,

was unable to do so. I can assure them that I saw the bird distinctly, and that it looked like nothing else but what it was. How then could any bird of prey—an Eagle, let us say, with the eye of one—be mistaken in the impression given it by something so salient and characteristic, having not only shape and colour, but a catherine-wheel-like gyration long, no doubt, associated in its mind with these, to aid or rather compel recognition? So, too, a man, I believe, not completely under the dominance of these ideas could not have seen in the defined shape and deep colouring of the head of the sitting bird, with the bright white patch on the throat, anything that specially harmonised with the light-brown rocks and green herbage which made the foreground and background of the nest. So dominated, I admit, he might have brought himself to think (being specially trained for it) that the first resembled a white spot on a stone, and the other a black one, or deeper-tinted grass-tuft.

Eagles and Falcons, however, know nothing of these theories, and their eye, with a life-long experience, must at once tell them what these two patches, with the dagger-like projection, are. I cannot doubt this, since mine told me without any. Still, even these keen-sighted watchers might see without noting, but that would only be because of the bird's sitting immobile on its nest. This habit which, to a certain degree, it possesses, may occasionally be of assistance even to so powerful a species as the Great Northern Diver, a bird as large as a Goose, with a bill like a dagger, or stout stiletto rather, which it must certainly know how to use, and building upon islands in lakes. Otherwise, I believe the sole but sufficient protection on which it is able to rely is its size, strength, and great powers of diving. Having seen a pair of Red-throated Divers on one of their small breeding lochs, in the presence of a large bird of prey, I can form some idea of how remote would be the chance of either Falcon or Eagle capturing one of these birds upon any wide space of its own element.

I had now to go back to my tent, to dress, both against cold and rain, for the latter was threatening. The first, alone, however, would have compelled me to endue myself with oilskin coat (or rather gabardine) and trousers, a very thick jersey (made specially for fishermen, I believe), a woollen face-protector and

gloves, to the boot of the motor suit and Shetland wool under-clothing which I already had on. Yet riding here, yesterday, I had worn only the motor suit—such is the difference between sunny and cloudy days in an Iceland summer. This change, or rather increase of attire, took me some little while, and on peering over the rise again, behind which I had been lying or crouching, I found the bird off the nest and in the water, though still close to the shore. I attribute this to my having assumed the upright attitude whilst still in its sight, when leaving, though at a considerable distance; for as long as one crouches, crawls, advances in a sitting attitude (like Irving in the play-scene in "Hamlet"), or even on one's hands and knees, no alarm seems to be felt by the birds. Acting now more cautiously, the bird was soon back on the nest again. I assume it to have been the same one, though, of course, it is impossible to be sure that there had been no change upon it whilst I was away. If there had, then in all probability I had had nothing to do with it. I was now in a better position to see the bird get up the bank. It did so by a tremendous spring out of the water, which, either alone, or with a step or two afterwards, brought it not sliding on to its nest, but standing up over it, the body, however, bent forward at a considerable angle. In this position it bent down its head into the nest, touching the egg (as has been said there was only one) with the bill, as it seemed to me, before sinking down upon it. It must, I think, in making its spring, have placed its legs well forward under its body, and then leapt right upon the bank. It did not merely push itself up the slope, with its feet, from behind, according to the general statement—at least it did not seem to me to do so.

All at once I see the female bird, as I suppose her to be, quite close to the islet—she must, I think, have dived to it—and now just under the nest, towards which she seems to look with an anxious, half-timid glance, as if pleading with her mate to come off, and let her enter again on her duties. This is a pretty picture, and it continues for some while, for the male, having his own sense of duty, is not to be entreated, but sits obstinately on. Thus repulsed, she at length turns disconsolately away, and, diving, disappears for some while altogether. When I see her again she is a long way off, on the other side



of the islet, but soon it appears that she is returning to it—evidently she cannot keep away. Nearer she comes, stealing at first, then with the manner of one whose mind is fully made up, and having rounded the point from which she first becomes visible to the sitter, there is, all at once, a great splash amidst the little stony archipelago, just within which the nest is situated, and the next moment he appears, swimming out to her. Again they pass each other, without pause or demonstration, though only at the distance of a foot or so, and, at 2.10, the female (if it be really she) makes the same vigorous leap up the bank, and once more takes sweet possession of that little shallow cup of dark earth in which all her simple bird-soul is centred, the contents of which ("the pity of it, Iago!") have probably been sold, long before, to some one who may be even now on his way out from England, to "obtain" them.

The bird now off duty rises in the water and flaps its wings several times, at short intervals. This is accompanied with some other little pleasurable actions, seeming to show appreciation of recovered freedom, and then it dives and is off. Some time afterwards I catch sight of it off the shore of a bay on the opposite side of the lake; but it dives again, after which I see it no more. These birds dive for great distances, and it is not easy to locate them on their re-emergence, if the waters of the lake are at all rough, as is the case to-day.

It is now 4.30, and there has been no further change on the nest. Neither has there yet, at nearly 9, when the cold and rain drive me, at last, into the tent. It rained most of the night, and the tent proved not to be waterproof—a heavy blow.

*June 16th.*—The first change on the nest observed by me to-day took place at about a quarter to 8 a.m., and the second at 8. The details were as follows. About 7.30 I saw the one bird swimming a little off the islet where the other sat on the nest. It would come up near the shore, and then swim out again, and again go in, peering up, each time, at the nest, in so wistful a manner that one seemed to see the actual expression in the eyes and countenance, though, in all probability, it was conveyed entirely through movement. Several times it went in between two large stones which stand right in front of the landing-place—for there is but one—and, in fact, showed every

possible sign of its strong wish to take its partner's place on the nest. All this while, however, the sitting bird sat on, and it was not till the petitioner had made several voyages right in to the bank, that it at last came off, and I saw it slide down the steep place, just pushing its body forward, to do so, without rising. After the slide both birds were, for a few moments, hidden behind the two large stones I have spoken of, then one swam out, and the other, shortly afterwards, leapt up the bank and took its place on the nest. I again noticed that it stood over the nest before sinking down on it, and it reached it, I am sure, in this attitude. The bird that had been relieved, or rather importuned into leaving, now swam out a little from the islet, and began to preen itself, flap its wings, and so on, before diving off (as I supposed it would do, after having sat all the night), when all at once, and to my great surprise, I saw the one that had but just commenced sitting, and had seemed so much to want to, swimming out from the stones, and keeping the pair, now carefully distinct, which was easy, I can say as a certainty, that when, in another few minutes, the nest was once more occupied, it was not by this same one again (as under the circumstances one might have expected it would be), but by its partner, whose place it had taken only for a quarter of an hour, or, to be accurate, seventeen minutes. I suppose it was the female, and that she can hardly keep away from an egg now well on towards hatching, but no one who had seen the male pleading, as it were, to be allowed to go on, could have thought that, of his own initiative, he would have come off again so soon. He did not go right away, however, but was still in evidence at 9, when I had to leave, though at some distance out in the lake. In spite of his short turn, it is plain that he, as well as the female, is very interested in the incubation. I have mentioned that, for a moment or two before the first change, both birds were out of view, so that it cannot be actually proved that the one who then came off the nest did not immediately go back on to it again, in which case there would not have been a change upon it at all. This introduces what may be called a scientific doubt, but, like a good many scientists now-a-days, I have disregarded even graver ones in more important matters—thought-transference, for instance, *und dergleichen*.

My reason for not staying and watching these Divers for, at least, another day, was that Sigurdsson had lately heard of a pair of Jer-Falcons—that splendid member of a high family, peculiar to Iceland, and soon to become extinct, even there, owing to every kind of persecution being ceaselessly practised against it, but chiefly there can be no doubt (since *qui facit per alium facit per se*) scientific collecting, both with gun and hands, on which, apparently, there is no check, and which falls, according to the particular kind of life-taking preferred by each class of collector, on the mature bird, the eggs, and the down-clothed young in the nest. Add to this, capture\* for captivity, poison—whether put down for Foxes only, or on the “with-one-stone” principle—and the undisguised gunning barbarian, ready to supply all parties—as witness the shops in Reykjavik, now the bird’s principal *habitat*, at any rate in the south—and it becomes apparent that the end cannot be much longer delayed, unless some peculiarly energetic and quite unexpected effort is made by a Government which cares little or nothing for its bird-life, in general, or (when not on a banner or bank-note) for this, the chosen national emblem of the country which it represents. Yet in the eyes, at any rate, of the more tasteful part of the outside world, this very bird fauna, thus neglected and thrown to the Philistines, makes, with her unique scenery, one of the two great charms which that country possesses. These reflections (not national but only governmental) may be permitted to one whose own Parliament refuses to pass a law preventing the importation of bird plumage, though the most beautiful and interesting birds of the world are perishing (to the point of approaching extinction) in consequence of that refusal, by ways the most cruel and for purposes the most trivial and contemptible. With so chastened a consciousness, they can hardly be thought admonitorial.

The place where the Falcons of which Sigurdsson had received information were supposed to have nested was a long day’s journey from where we now were. The man on whose land the eyrie was situated was not known to him personally, and there were some other elements of uncertainty which grew,

\* The inaccessibility of the nest is a myth. It is always accessible so long as a rope (wrongly used) and a purchaser is.

upon reflection, and made the quest a somewhat doubtful one ; but my imagination was fired with the idea of watching such birds amidst surroundings of utter and remote wildness. I had sighed for Peregrines, and here were greater than Peregrines, so I decided to make the expedition, thinking it would be worse to miss through not going than to go in vain. I struck my leaky tent, therefore, and, soon after 9, we started, the farmer, at whose house Sigurdsson had slept, accompanying us for a short distance to put us into the way. This, however, would have been but little use, had there not been a pretty fair general knowledge on the part of my guide. The greater and much the more enjoyable part of the way was without road and often without paths—meaning pony-paths—wild, waste, desolate country, much of it swampy—tussocks of long, wiry grass and grey moss, with soft, flat sponginesses between, that quaked as the ponies went over them. Sometimes they foundered—Sigurdsson had once to slide off and pull his out by the reins—but mine went no farther than giving me fearful sensations of something much more serious than this ; it seemed so bent upon sinking that I wondered continually to see it still under me. But in all this wildness and depopulation there was none of the dreariness of solitude, for the Whimbrel and Golden Plover haunted it everywhere, and with their flittings and cries, all in keeping, made it a pleasant desolation. Grass and grey moss clothed most of the country, but three out of every four blades, or rather strings, of the first were withered, which gave it a tawny coloration, with only “an eye of green in’t” as in Prospero’s island. Here and there, however, were some really green stretches of true turf, along the banks or in the bend of some rivulet, reminding one of common-land in England. Generally speaking, it was flat, sometimes rolling, not often steep except when one plunged down into watercourses ; but out of this general flatness there rose, all about, great stony hills or hid-mountains, that reared themselves suddenly up, and had usually the most salient and, as one may say, violent shapes. Some, that we passed quite close under, were nothing but enormous heaps of shattered fragments of the basic material—lava, namely—reduced wholly to this condition, and so like mere stone-heaps, made by man, that one almost accepted them as such, and wondered at their size ;



it seemed as if some giant had sat breaking stones on the highway, if highway there had been, but in others there frowned, above this chaos, the most awful black precipices, in whose scarred face was still to be traced that basaltic or columnar structure, due to the cooling of lava-streams, of which Fingal's Cave, in the Hebrides, and the Giants' Causeway, in Ireland, are the most perfect, or, at least, the most familiar examples.

As the prospect opened, mountains and chains of mountains rose gigantic on one another, their summits showing every variety of the steep, abrupt and irregular, varied, sometimes, by flat, round or conical, and their hues, except where snow lay on them, like those of night's kingdom. Some had their tops, as well as a considerable portion of their height, completely covered, amongst these being Hecla, whose great mass reared itself hugely and whitely above others near it, but in rounded proportions, without peak or pinnacle. Further off, but in the same line of elevation, another great snow-mountain, that rose with smoother sweeps, had its summit—higher even than that of Hecla—crowned with two almost perfectly conical Fusi-yama-like peaks, one a good deal larger than the other, but both looking small against the great mass that they stood on. Both peaks, I suppose, are volcanoes, or rather the whole mountain is, and these are the funnels through which it may, at any time, break out into eruption, though, unlike many others, it has not, I believe, done so within the memory of man. We rode all day under the forehead of Hecla and of this other great mountain, and, towards evening, came to, or, rather, from precipitous heights, looked down upon a river, so gloomy, and flowing amidst such tremendous scenery that it might have been Styx itself. Black, beetling precipices rose almost sheer from its waters, but these were but the lower flanks of the mountain gorge that they flowed through, which, yawning upwards, and widening to the sky, towered far above them in a second line of escarpment, on the summits of which we now stood—we had been mounting gradually for a considerable time. This was scenery which stirred the blood and made the pulse of life beat quicker—dark, wild, mysterious, suggestive, stupendous in all its features, like a Salvator Rosa landscape or Doré's illustrations to Dante or Don Quixote. Thoughts of some days or a

week, perhaps, spent amongst these sublimities, the tiny tent fixed halfway up—suspended, as it were, between the black torrent and the frowning brink, “twixt upper, nether, and surrounding precipices”—began to take hold of me, for it was in some cleft of the heights on which we now stood that the Falcons should have had their eyrie. But all was nought, visions faded and high hopes were quenched very shortly, for all that the man whose statement—as we imagined—had brought us here had to say, after guiding us to the awful verge and leaning there familiarly on his stick, was that such a pair of birds had indeed nested just below that point for the last eight years, but that, contrary to expectation, and for some unexplained reason, they had not done so this year, that his son, when he said that they had spoke only from likelihood, but had not actually verified what he felt sure about; it was foolish of him, he had acted unadvisedly, he should have said nothing where there was no actual certainty,\* and so on—it was all the son. “Ibi omnis effsuus labor.” It was a sad walk back to the little, lonely homestead where we had left horses and baggage—all in pouring rain which had lately come on—to be shown what there was no use in showing. When we got there, again, we were asked in to coffee, but I was less struck with its excellence and the hospitable ways of the country than I might have been on another occasion. Though it was now 10 p.m., we started back that same night, but only made a short march to a hostelry, or something which served as such, where Sigurdsson slept, whilst I, seeing no reason to increase travelling expenses, which are not light in Iceland, had recourse to my tent. Next day, towards evening, we got back to the place we had started from, and thus ended the quest of the Falcons.

\* Not even that the four young Falcons had been sold at ten *kronen* apiece.

(To be continued.)

## ON THE MARSH- AND WILLOW-TITS OF FRANCE.

BY COLLINGWOOD INGRAM.

OF the many difficult and complex groups that have arisen since the introduction of the trinomial system, that relating to the Marsh-Tit is probably the most perplexing. Certain races of this widely diffused species are admittedly distinct enough and have tolerably well-defined characteristics of their own, but others can only be distinguished with the greatest difficulty. If we were to compare these various forms with a single type only (as was formerly done), we might recognise some of these subspecies with comparative ease. But lately the species has been duplicated. The term "Marsh-Tit" has become less comprehensive, and is now restricted to the birds having a bluish metallic sheen on the black portion of their heads (*Parus palustris*, L.), while those with a dull, sooty-black crown are now known as the Willow-Tits, having for a type *Parus borealis*, Selys.\*

So far so good, but when we attempt to further divide these two into numerous geographical forms our trouble commences, and it is not lessened by the fact that the immature *P. palustris* has more or less the same lustreless black pileum as the adult *P. borealis*!

Most field-naturalists maintain that the two birds differ slightly (though constantly) in their mode of nidification and in some of their notes. However interesting these differences may be, when one recollects how notoriously versatile are all the members of this family—and especially in regard to their song—we cannot lay much stress on these supposed peculiarities.

Although, as I have hinted, more convincing evidence would

\* Dr. Hartert takes the American *P. atricapillus* for the type species in his 'Vögel der paläarktischen Fauna' (vol. i. pp. 376 *et seq.*).

be very welcome, in the meantime I certainly think it expedient to follow the younger school of ornithologists in separating these birds into two distinct groups, viz.:—(a) The Marsh-Tits (*P. palustris*), or those with a steely-blue sheen on their crowns; and (b) the Willow-Tits (*P. borealis*), or those with dull sooty- or brownish-black crowns. Each are represented in France; the former by *Parus palustris communis*, Baldenst (or *P. p. longirostris*, Kleinschm, by those who recognise this subspecies) and the Willow-Tits by *P. borealis montanus*, Baldenst, and possibly *P. b. rhenanus*, Kleinschm.

Under the name of *P. p. longirostris*, Dr. Hartert (Vog. pal. F. i. p. 373) separates the Marsh-Tit found in France, Belgium, and Holland from the one inhabiting Mid-Europe (*P. p. communis*), on the assumption that it has a slightly darker and more olive-coloured back and rump. In my collection I have a series of these Tits from various parts of France taken in the spring months. All have the upper parts greyer and lighter, if anything, than in specimens from Germany, &c.\* The bill of the French bird is also supposed to be usually larger, but I have failed to detect an appreciable difference in any examples that have come under my notice, and Dr. Hartert admits that this is a variable feature. Under the circumstances, therefore, I am convinced that *P. p. longirostris* is an undesirable subspecies, and in my opinion the French bird should certainly be associated with *P. p. communis*.

If somewhat partially distributed, the Marsh-Tit appears to be nevertheless tolerably common in most parts of France with the exception of the south-eastern portions. In Provence, Languedoc, and Rousillon it seems to be an exceptional winter visitor, but west of the Cevennes one begins to meet with it in fair numbers. I found it by no means rare near Millau and on

\* This paler coloration may, in part, be due to the season at which the birds were taken. Unfortunately I have not been able to compare a series of topotypical *P. p. communis* killed at a corresponding time of the year with my own French skins, nearly all of which were collected during the months of April or May. My conclusions are not, however, based on these specimens alone. Altogether I have examined upwards of sixty or seventy specimens from this country, including the French skins in the British Museum, obtained at other times of the year from the Vosges Mountains and north France.



the Plateau du Ségala in the spring of 1912, while it was quite common up the wooded valleys of the Basses- and Hautes-Pyrénées, and I shot specimens there practically on the Spanish frontier. It breeds and is, to a certain extent, sedentary throughout the rest of France, following the mountain systems down to at least as far south as Savoy (*cf.* Bailly, Ois. de la Savoie). At high elevations in these Alpine districts it is entirely replaced by *P. b. montanus*.

This latter bird, the large Alpine Willow-Tit, inhabits the upper forests of the Jura\* and various Alpine systems, rarely descending below 3000 ft. In the summer its vertical range commences at about 4000 ft. and extends up to the limit of the forest growth. In the Alpes-Maritimes I have encountered it up to 6000 ft., frequenting the larch woods in preference to those composed of spruce and fir, which latter are always the favourite haunts of its allies, the Coal and Crested Tits.

The song of the Alpine Willow-Tit is a somewhat melancholy pipe—a single note repeated four or five times consecutively; while its cry of alarm is a deep, scolding *chooo, chooo, chooo*, more prolonged and delivered in a rather lower key than that of a Marsh-Tit. Both birds possess variations of this, one might almost call it, the “family” note. In *P. p. communis* it resembles the syllables *wee-choo, choo, choo*. The song of the latter bird, by the way, seems to vary in different districts, and when I was collecting in the Pyrenees, at first I was much puzzled by its voice. In this locality the males uttered a clear *chai, chai, chai*, sounding to me more like part of a Tree Pipit’s song than that of a Titmouse.

The claim of the Rhenish Willow-Tit (*P. b. rhenanus* Kleinschm) to be included in the avifauna of France rests, first, on the slender evidence of two questionable specimens having been bought in the markets of Paris and, secondly, upon two sooty-crowned birds from the Vosges Mountains now in the British Museum. These latter certainly appear to be referable

\* Personally I have not met with it in this range, but Fatio (*cf.* Cat. Ois. de la Suisse) says it is sedentary in the Upper Jura from the French frontier to the Jura Neuchatelois.

to the Willow-Tit groups, but other examples from the same source are undeniable Marsh-Tits.

Another allied form alleged to have been taken in France is the Sombre Titmouse (*Parus lugubris lugubris*), a bird whose habitat lies in south-eastern Europe. Ogerien (*His. Nat. du Jura*) includes this species in his list of the birds of Jura, but he has in all probability confused it with *P. b. montanus*, a species somewhat surprisingly omitted from his book. There is, according to Arrigoni (*Man. Orn. It.* p. 194), an example of the Sombre Tit in the Florence Museum, labelled "Nice, February 2nd, 1878," but its authenticity is open to question.

## A CASE OF PARASITISM OF *MELECTA ARMATA* ON *ANTHOPHORA ACERVORUM*.

By J. CHARLES JOHNSON, M.A., M.Sc., M.B.

THE genus *Anthophora* is of world-wide distribution, and contains about one hundred and thirty species, of which four are native to Great Britain. It is a somewhat plump, hairy bee, and, like all the Scopulipedes, possesses the necessary apparatus for gathering and storing pollen for its young, so that the larva on emerging from the egg has an ample store of food. It is a commonplace in the animal kingdom that such parental assiduity should invite the intrusion of a new organism whose offspring would have the advantages that its young host should enjoy, and cause the death of the latter in various ways.

The insect kingdom so obviously teems with such examples that it has been said that insects may be divided into two great armies, one of which tries to destroy the other, often by intricate relations of parasitism and hyperparasitism. Very frequently the parasite will confine its attentions to one genus or even one species. The latter is well exemplified in the case of *Melecta* and *Anthophora*.

*Melecta* belongs to the subfamily *Cuculinæ*, familiarly called "cuckoo-bees" from their propensity to lay eggs in the nests of other bees, and in them the pollen-collecting brush, so characteristic of the legs of the Scopulipedes, is absent. They are obligate parasites on that account, since they must place their eggs near a store of pollen which they are unable to collect for themselves.

*Anthophora* is colonial only in the sense that it is of a gregarious disposition. Their cells are open, and absolutely independent. Each bee constructs its own nest and accumulates pollen for its own young only, so that there is no division of labour as in the truly colonial hive-bees.

An excellent opportunity of studying the habits of *Anthophora*

*acervorum* was afforded at Cottenham, a few miles from Cambridge. The bees had made their habitat in the front wall of a cottage with an eastern aspect. This wall was plastered with a clayey material, rather friable to the fingers, and roughly "dashed" with small flints. The bees reached a maximum about two years ago, when they had excavated over two hundred cells. Their constant coming and going made a continuous hum, and occasionally they formed such a cloud as to remind one of Gilbert White's account of this "wild bee" which appeared in great numbers on Mount Carbon, near Lewes, and dashed "round the heads of intruders with a sharp and hostile sound."

The manipulations of the bee on making its burrow were most interesting; the mouth-parts were used to remove the plaster, the resulting fine *débris* was then kicked out with the middle and third pairs of legs. Smooth tunnels were thus patiently made, many were very tortuous and pierced the wall for about three inches, probably ending between the bricks or stones behind the plaster. The nucleus of some was formed by the dislodging of a flint.

The parasite of *A. acervorum* is *Melecta armata*. The latter is a handsome bee in a quiet way, being of a shining black varied with spots of white pubescence. *Melecta* is an interesting exception to Shuckard's contention that the parasitism of a bee is proportionate to high coloration, "great decoration being in our native genera of bees the badge of parasitism." \* Shuckard has also described the fierce pugnacity with which *Anthophora* attacks the invader of its nest.† Fries's observations tend to show that the relations between the two are not friendly. He says that *Melecta* gets out of the way of the home-coming host. D. Sharp‡ doubts whether this can be construed as fear, and thinks it more likely that the intruder would find it more discreet to avoid disturbing *Anthophora* as "it is the interest of the parasite to avoid annoyance and to be well-mannered in its approaches."

During the many opportunities I had of observing the attitude of the insects to one another, I failed to note any

\* Shuckard, 'British Bees,' p. 66.

† *Ibid.*, p. 240.

‡ Sharp, 'Cambridge Natural History,' vol. vi. p. 32.



marked antagonism or bellicosity. The attitude might truly be described as neutral. I cannot vouch for the behaviour of the host to the parasite actually detected in its burrow, but I observed several occasions on which *Melecta* was quite near the entrance of the tunnel of an entering pollen-laden *Anthophora*. In such cases the host entered and left its nest without any evident notice of the parasite which seemed to stroll nonchalantly into various burrows and select one at leisure. Sometimes a *Melecta* would pass near an *Anthophora*, busily engaged in smoothing the inside of its nest with its mouth-parts, and here also both insects evidently ignored one another. In no case did I see any combats such as Shuckard describes.

The *Anthophora* showed a considerable decrease in number last year, while in the early summer of this year the reduction was still more marked. Although the inhabitants of the cottage had made an abortive attempt to get rid of the pest when it was at its maximum by plastering up some of the burrows, it seemed clear that the progressive decrease was mostly due to the parasitic action of *Melecta*, which could easily be collected in some quantity at breeding time. In this case other parasites of *Anthophora*, such as the genus *Anthophorabia*, *Monodontomerus*, and *Heteropus*, were not observed.

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## NOTES AND QUERIES.

## A V E S.

**Birds Rearing Broods in Old Nests.**—Since my garden has contained sufficient cover to induce the birds to build in it, I have discovered it not very unusual for the Blackbird to lay a second time in the same nest from which the first brood had flown—this occurred in 1905, 1909, 1910, and 1911. I have never known the Thrush to do this, but have known it to take possession of a nest in which a brood had been reared the previous year. In 1911 Thrushes built in a gorse bush near my small fish pond, where I discovered the nest on March 1st; the brood left on April 4th, and every member of it perished during the several days of bitter cold and snow we were then having. These birds then possessed themselves of a Thrush's nest in which a brood was reared the previous year, situate in a laurel six yards distant, and had commenced to sit by the 17th. This is the only instance of the Thrush using an old nest that has come under my notice, but it may occur more often than one might suppose. With the Hedge-Sparrow I find it will sometimes pull an old nest to pieces and use the materials in the construction of a new one, and on one occasion, in my garden, a "last year's" nest was actually used and a brood reared in it, very little renovation being considered necessary. This year Wrens have for the fourth year in succession brought off a brood in the same nest, but the situation of this nest must be taken into consideration—it is built inside a small rustic summer-house, unaffected by meteorological conditions. In 1910 Pied Wagtails reared a brood in a Robin's nest from which the young had recently flown, this nest being built on an ivy-clad wall; and last year (1912) Robins hatched off a second brood in the same nest they had used for the first, which was in an old canister which I had placed in a hedge for the purpose. Great Tits occupied one of my nest boxes and successfully brought off the young, when another pair immediately took possession of it, and likewise reared a brood—this being the only occasion upon which this has taken place in my garden, though I should suppose it to be a common occurrence. My Wrynecks will evict the Great Tit when a pair has taken possession of their favourite box, but I cannot say the nest itself

has actually been used, as the Wrynecks have entirely removed that, together with the eggs it has contained. I remember, about forty years ago, seeing Wryneck's eggs taken from a Wren's nest in an orchard at Owlsbury, in the adjoining parish of Little Horsted. I am afraid the Wryneck is less common now than it was in those days, though I should not like to suggest that it was so numerously represented as to have any difficulty in finding suitable holes in which to lay. Of course we know some of the larger birds will make use of an old nest of their own species, or otherwise, but I should suppose it far less common with our smaller birds.—ROBERT MORRIS (Uckfield, Sussex).

**Ornithological Notes from Yorkshire.**—A good many—if not most—writers on British birds state that the Blackcap (*Sylvia atricapilla*) is much commoner and more local than its congener the Garden-Warbler (*Sylvia hortensis*). The relative status of these two species does not apply to this district nor to many, if not most, other parts of Yorkshire; more particularly is this the case in the north and north-west Yorkshire. Both species vary in numbers within certain limit every year, but I have never known a year in which the Garden-Warbler has been scarcer than the Blackcap. In many districts I have visited the Blackcap is a general term applied indiscriminately to any bird with a black head, such, for instance, as the Marsh and Cole Tits, and even the Great Tit; and this confusion, I fear, has often given rise to the idea that the Blackcap is much more common and generally distributed than is actually the case. Judging from my own observations there must be many districts other than in Yorkshire where the Blackcap is much less common than the Garden-Warbler, and I should be very pleased to have any notes from readers of the 'Zoologist' regarding the relative status of these species. Has there been any change observable in the relative numbers of these species of late years? The Garden-Warbler is not usually regarded as such a hardy bird as the Blackcap, and at first sight it would appear that the latter species would be much more at home in north-west Yorkshire, but such is not the case.

On October 16th I saw a party of small birds at a distance beside the stream which runs near this village. On my approach they flew off a short distance near a poultry cote, around which I cautiously crept, and had a very fine view of a cock Mealy Redpoll (*Linota linaria*) feeding very greedily upon the seeds of Meadow Sweet (*Ulmaria*). The other birds had evidently flown away. It permitted

me to approach within a few feet without manifesting the slightest fear. This species is a very irregular winter visitant, and visits at wide intervals—as in the years 1878–79—this district in considerable numbers, since which years it has been very scarce. Recently I was passing near a garden when my attention was attracted to a bird at a distance feeding on the seeds of soft grass (*Holcus*), which I identified as a Twite (*Linota flavirostris*). I often see this species here in autumn feeding on various seeds of wayside plants, but I do not remember seeing it before feeding upon the seeds of grasses.

Recently (October) I saw another Mealy Redpoll feeding upon the seeds of the Meadow Sweet in the same place I saw the other, which I have previously mentioned. This time a few Chaffinches were amongst them, all male birds, the females having left here a fortnight ago. The first migration of House-Martins left here on August 27th, all, or nearly all, of which were young birds—this was fully a month before the old birds left. A friend of mine has been describing a bird which I think can be no other than a Golden Oriole, which he has seen with some Thrushes in a plantation about a mile east of this village. My son Rosse states he found last summer a Cuckoo's egg in the nest of a Tree-Pipit near Keighley, which is quite an uncommon occurrence here; the Cuckoo much prefers the Meadow-Pipit as a fosterer. It is often said that the Cuckoo's eggs vary more than any other British bird, but the Tree-Pipit's eggs vary much more in this locality. Indeed, Cuckoo's eggs keep fairly well to one type, which is very similar to the Skylark's egg in size and coloration in this neighbourhood, so much so that I have often wondered why the Cuckoo does not much more often lay its egg in the nest of the Skylark, since there would be no difficulty in finding nests with fresh eggs during the whole time the Cuckoo is with us, for I consider the Lark our most abundant species. Is this similarity of the eggs of the Cuckoo and Skylark a mere coincidence, or does this fact stand in some vital relationship in the past history of the Cuckoo? Our son Rosse records the Goldfinch near Keighley, and it has appeared this autumn in one of our neighbouring dales. It is some years since I saw this species. I heard the Mistle-Thrush singing as late as June 21st near Grasmere, and it was singing here in the garden about the beginning of the new year. Whilst in Derbyshire I saw a male Spotted Flycatcher feeding a female several times in the kitchen garden of one of the lodges leading into Chatsworth Park. I saw a Sandpiper in Chatsworth Park beside the river, which kept flying into a plane tree, not merely perching on the lower branches,



as I have seen them before, but this bird flew right up and perched on the higher branches of the tree, and did so almost with the facility of a Wagtail. The Ray's Wagtail was very abundant in Chatsworth Park. I also saw a Greater Spotted Woodpecker in the woods behind Chatsworth House. Rooks this summer have established a small colony of nests, and brought off their young successfully near my residence. The oldest inhabitant does not remember the Rook nesting previously in this locality. The Greenshank, Oystercatcher, Pochard and Golden-Eye, have also been seen in one of the adjoining dales. It is well known that much migratory movements exist even among what are called our resident birds, so I have kept my eye on a Dunnock \* which has one half of its tail quite white. It was here all last winter, and has bred this summer, and still it is here. Has the Yellow Bunting larger clutches in some parts of its British range than here? It is exceptional to find a clutch in this neighbourhood of four eggs, the more usual number being three. I am sure I have found larger clutches in other parts of England.—E. P. BUTTERFIELD (Wilsden, Yorkshire).

## CRUSTACEA.

*Thia residuus*, Herbst. (*polita*, Leach) in North Wales.—This interesting crab was first taken by Dr. Melville in Galway, Ireland, as recorded by Bell in 1853—one male and two females with spawn. A further specimen was recorded from Wales by Mr. A. O. Walker in 1885, when one specimen was dredged near Llandudno, and again in 1890. It therefore occasioned me great surprise to find one when digging for shells with my nephew on a small sandbank at Abersoch in August last. The tide was a very low one for that time of year and just on the turn, so we had to work hard at that tide and the following low tides, with the result that we found twenty-six fairly large specimens, and some smaller ones which we did not keep. The largest specimens measure just under three-quarters of an inch in length and a full three-quarters in breadth. The colour was ivory white in all cases, and the two spots when present bright orange. The majority were females, but with no spawn. The species is evidently gregarious, as twice we discovered two close together, but of the same sex, and though we worked the adjoining sandbanks we failed to find any more. It is possible they came in from deeper water to change their shells, as one was found with the new carapace developed.—E. B. NEVINSON (Morland, Cobham, Surrey)

\* Hedge-Sparrow.

## OBITUARY.

RICHARD J. USSHER, D.L.

WE have to record with the greatest regret the death of this well-known Irish ornithologist, who passed away on October 12th. The following notice is taken largely from the Dublin 'Express' of October 16th, forwarded to us by the kindness of Mr. C. B. Moffat:—

Not since the lamented death of Alexander Goodman More in 1895 have Irish naturalists sustained a loss that will be so poignantly felt as that of Mr. R. J. Ussher, D.L., of Cappagh House, County Waterford, whose remains were interred at Whitechurch, Cappagh, on October 15th, in the presence of a large number of mourners. Mr. Ussher's many excellent qualities both of head and heart endeared him to a wide circle, and he had for a long time occupied a prominent place in the local public life of his county.

He will, of course, be chiefly remembered as an ornithologist, and in a country in which the study of birds has had so many votaries since William Thompson published his celebrated three volumes on the birds of Ireland in the first half of the nineteenth century, it is no small tribute to Mr. Ussher's real genius as an ornithologist that he should have been by common consent elevated to the leading place amongst them, and induced by the unanimous wish of his brother naturalists to undertake the writing of the new standard work on Irish birds, which had become a necessity in consequence of the large amount of new matter that had accumulated since Thompson's death. That task had originally been placed in the hands of four leading Irish naturalists—the late A. G. More, Mr. Ussher, Mr. R. M. Barrington, and Mr. Robert Warren. But Mr. Ussher's peculiar fitness for it so deeply impressed itself on his colleagues that it was soon decided to place the writing of the book almost entirely in his hands; and rarely has a task so committed been discharged with greater thoroughness and more inexhaustible patience.\*

Mr. Ussher's correspondence with the bird-lovers and bird-students of every Irish county, extending as it did over the long series of years in which he was collecting material for his principal book, would fill many volumes, and the pains he took to elicit and

\* 'The Birds of Ireland,' by R. J. Ussher and Robert Warren (1900).

tabulate information from every source was simply astonishing. At the same time no man was ever further from the ideal of the mere cabinet naturalist. There was hardly a mile of rocky or precipitous coast-line girding either the Irish mainland or any of the outlying islands which Mr. Ussher had not personally explored in his ceaseless search for the breeding haunts of the rarer Irish birds. There was scarcely a lake or a marsh of any extent throughout all the midland counties which he had not explored with equal zeal. A fearless swimmer and climber, he penetrated the least accessible haunts of the various Falcons, Petrels, and Divers whose habits he had made it his vocation to study. His famous collection of birds' eggs—a collection originally begun, we understand, on the suggestion of the late Mr. Howard Saunders—was one of the fruits of his untiring activity as an explorer and climber. It was an education to be shown through even a small portion of it. After the publication of his fine volume, 'The Birds of Ireland,' which appeared in 1900, Mr. Ussher parted with his great collection of eggs, the major portion of which was acquired by the Dublin National Museum; and it is hardly an exaggeration to say that these are now amongst the most valuable possessions in the Natural History Department. The Museum also owes to Mr. Ussher that most excellent guide to its ornithological collection, the 'List of Irish Birds,' which he drew up with the utmost care in 1908 to bring up to date the information published in the similar list drawn up in 1890 by A. G. More. Mr. Ussher's list, like Mr. More's before it, is now the inseparable *vade mecum* of every Irish ornithologist when he visits unfamiliar ground. The amount of information compressed within its fifty-four pages seems almost miraculous.

Of late years Mr. Ussher's indomitable energy found vent in investigations bearing on the prehistoric fauna of the country—a source of study he had hardly ventured to tap while absorbed in the preparation of his chief ornithological work. Perhaps he was largely stimulated to the cave-digging explorations that resulted in such important finds by his remarkable discovery of numerous remains of the extinct Great Auk in "kitchen-middens" on the coast of Waterford, and subsequently in a few other localities. Be this as it may, his zeal for cave research quickly became a passion, and resulted in most important additions to our knowledge of the animal life of Ireland in the dim and distant past. Summer after summer—in company with Dr. Scharff, and sometimes with other devoted zoologists—Mr. Ussher would shift his quarters to the vicinity of some unexplored Irish cavern and spend weeks in superintending

the work that laid bare the bones of Mammoths, Hyenas, Arctic Lemmings, and African Wild Cats. Whilst thus intent on facilitating the study of the past, Mr. Ussher was far indeed from slackening in his interest in the present day fauna. Few took so active a part as he in the promotion of the cause of bird-protection, and the Irish Society for the Protection of Birds has special cause to deplore his loss as that of one of its most efficient and whole-hearted members. Nothing ever gave him greater delight than the discovery of some hitherto unknown nesting-place of a rare bird, where it could hope to escape detection or molestation. It is some satisfaction to his friends to know that at least one such discovery was brought to his knowledge during the present year, and afforded him the utmost pleasure. Another of his most conspicuous traits was that love for encouraging the study of nature—especially among the young—which had also been so prominent a feature in the character of A. G. More.

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#### NOTICES OF NEW BOOKS.

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*The Peregrine Falcon at the Eyrie.* By FRANCIS HEATHERLEY,  
F.R.C.S. George Newnes, Ltd.

THIS is a beautiful publication, both in letterpress and illustration, and marks another advance in the annals of bird watching. Dr. Heatherley distinctly and perhaps rather too modestly defines his position as that of simply "bird-lover," and expresses himself very candidly on the subjects of egg-collecting, skin-collecting, and modern changes in nomenclature. His facts are all the results of personal observations, he has "no exaggerated veneration for the printed word," which he too often finds "is copied from one text-book to another, in default of original observations," and he therefore watches without preconceived ideas. He has thus come to the conclusion that the Falcon is bigger than the Tiercel, and states "if that is wrong, then all my observations of the inverted rôle of the sexes in their care of the young goes by the board." Of the Peregrine



language he only learned three phrases, "but the use of a hiding contrivance greatly enlarges one's appreciation of bird-language, a rich field awaiting investigation by ornithologists." This is really encouraging and advanced reading, and one of the very few recognitions of the vast revolution in evolutionary and zoological conceptions which will ensue when the language of other animals than ourselves has been studied and understood; this has now ceased to be regarded as quixotic, though too frequently relegated to the region of the unlikely. That professional egg-collectors are an absolute danger to the survival of many rare birds is apparent by the wise withholding of the locality where Dr. Heatherley and his friends made their important observations on living Peregrine Falcons.

The numerous illustrations show what photography is doing for ornithology, and the method will undoubtedly be applied to other animals by other students and lovers of Nature. In his introduction we are glad indeed to read that "The full notes will, I hope, appear later in the 'Zoologist.'"

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*Evolution by Co-operation; a Study in Bio-economics.* By HERMANN REINHEIMER. Kegan Paul, Trench, Trübner & Co., Ltd.

THIS book is largely a disputation. It is strongly anti-Darwinian, especially so far as Natural Selection is discussed, but it leaves the problem very much where the author found it. The recognition of Darwin's theory of Natural Selection as a great but not sole factor in evolution is one thing, the acceptance of the "all-sufficiency" of Natural Selection in our conceptions of evolution is another. Many naturalists hold fast to the first without subscribing to the second and more recent formula. There is great truth in the prophecy of Huxley—quoted by Mr. Reinheimer—that "The new generation educated under the influences of the present day will be in danger of accepting the main doctrines of the 'Origin of Species' with as little reflection, and it may be with as little justification, as so many of our contemporaries rejected them." In fact, this has come to pass. But the method of Darwin was built on observation and reflection, rhetoric is absent in his deductions, and he who would be a

successful antagonist to his views must pursue the same careful and persistent marshalling of facts and observations ; logomachy is a useless weapon.

Robert Chamber's 'Vestiges of Creation' is the first book mentioned in the Preface, and we find many almost forgotten opponents resuscitated in these pages. Mr. Reinheimer's attitude on the question may be represented by the following quotation:—  
"The question may be asked : How is it that the hold of the Natural Selection theory upon many is such as to cause them to remain satisfied with the theory ? I can explain it only by the supposition that, in spite of their protestations to the contrary, the idea of Providence as a compensatory law (of their principle of mere expediency) lurks in the minds of these thinkers." Again, the author declares that the non-consideration of certain processes which he deems essential confirms him in the view "that Natural Selection acts mainly by making sophists of otherwise able and learned, though not always too amiable, men." Had Darwin lived to the present day he would have been the foremost to examine with candour and attention the views of Mendel and de Vries, and he would have been the last to disregard or ignore them ; we can also feel assured that many other theories and facts would have been gathered in his web of contemplation ; with what effect we know not ? But to very many who accept Natural Selection as a great evolutionary factor, but not as an "all-sufficient" revelation once delivered to the Saints, mere disputation will not be recognized as an argument either one way or the other. The 'Origin of Species' was the greatest book of the nineteenth century, whether its teachings are accepted or denied ; to attack it, the same method of reasoned fact and quiet argument must be employed—Disputation pure and simple is not sufficiently convincing.

## EDITORIAL GLEANINGS.

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**RATS AND RED CURRANTS.**—The Rev. W. A. M'Gonigle, of Ellingham Vicarage, writing in a recent issue of the 'Newcastle Daily Journal,' relates the following curious experience relative to the loss of wall-trained red currants: "These particular currants," he writes, "grew in bushes trained up the side wall of a 'hemel,' and were a fairly good crop. As they were intended for later use they were carefully netted, and not closely watched. One day the startling discovery was made that the bulk of them had disappeared. On closer examination it was seen that neither bird nor wasp nor human hands had carried them off. All of these have their own peculiar trade-marks which cannot be mistaken. A new agent was at work. What, none could say. Still the currants went, and that rapidly. At length the marauders were discovered in the very act. A colony of rats had their home in the 'hemel.' A hole under the eave permitted access to the bushes, and climbing down and up they had neatly and with care eaten off practically the whole crop. Such an experience can hardly be unique, but it is so singular, as far as I am aware, as to make it worth recording."

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"THE Forest Service of the United States Department of Agriculture reports that during the past fiscal year 4686 predatory animals were killed by Federal officers on the National forests. According to an actual count of carcasses, the rangers' bag of beasts of prey this year was made up of 206 bears, 3541 coyotes, 133 pumas, or mountain lions, 62 lynx, 583 wild cats, 64 wolves, and 97 wolf pups."—('Pall Mall Gazette,' Sept. 30th, 1913.)

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"MR. JAMES PARKER, of Burnham, shot a Flamingo on the evening of Sept. 23rd. The bird, which is a splendid specimen of its species, measures 5 ft. 8 in. across the outstretched wings. When shot it was swimming on the Crouch off Bridgemarsh Island."—('The Essex Weekly News,' Sept. 26th, 1913.)

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A **SPLENDID** specimen of a Salmon Trout in fine condition was caught in the Mill Pool, Dedham, on Wednesday at midnight, measuring 2 ft. 9 in. in length and drawing the scale at 10 lbs.— ('East Anglian Daily Times,' Oct. 11th, 1913.)

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**INFORMATION** of a remarkable freak of Nature comes from Port Alfred (Cape Colony), where, in the nest of a pair of Ostriches, belonging to Mr. D. Aitchison, a chick having four legs, four wings, two tails, and one head, was hatched. The feet and other parts of the bird are perfectly formed. This extraordinary specimen has been forwarded to the Director of the Albany Museum, Grahamstown.— ('The African World,' Oct. 18th, 1913.)

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**NEWS** has been received in London of the death at Loanda, Angola, Portuguese West Africa, on October 31st last, of Dr. William John Ansorge, the famous traveller and explorer. Dr. Ansorge was educated at Cambridge, and afterwards went to Mauritius, where he became Professor at the Royal College, and also did a great deal of private tutoring. Subsequently he returned from Mauritius, and at the age of forty began the full medical course at St. Bartholomew's Hospital, and qualified as a doctor. He did not practise in England, but went straight out to Africa, where he became district medical officer in Uganda and Southern Nigeria. After retiring from Government service he continued his scientific and exploration work, and specialized in West African birds and fishes. He made new discoveries in nearly every department of the animal kingdom, and sent specimens to the British Museum and the Belgium Museum at Brussels. He also used to collect specimens for the Hon. Walter Rothschild.— ('Evening News.')

Dr. Ansorge's principal publication was 'Under the African Sun' (1899), in which a number of new zoological species were described by various specialists. Many of these descriptions, however, had been published in advance in 1898.

